HYDROGEN SULFIDE
FREQUENTLY ASKED QUESTIONS

What is hydrogen sulfide?

Hydrogen sulfide is a heavier-than-air, flammable gas with a characteristic rotten egg odor. Individuals can detect this odor when hydrogen sulfide gas is present at very low levels. Each individual has a different sensitivity to the odor.

How is hydrogen sulfide produced?

Hydrogen sulfide occurs both naturally and from industrial processes. Natural sources include crude oil, natural gas, salt marshes, sulfur springs, and swamps. Industrial sources include manure handling operations, oil refineries, pulp and paper mills, tanneries, wastewater treatment plants, and solid waste landfills.

Hydrogen sulfide may account for up to 1 percent by volume of landfill gas emissions, although typically the percentage is much less. The formation of hydrogen sulfide within a landfill depends on certain conditions including moisture content, temperature, and pH; anaerobic conditions (lacking oxygen); and a sulfate source.

What types of wastes contribute to hydrogen sulfide formation in landfills?

Gypsum wallboard, a component of Construction and Demolition Debris (CDD), is a major contributor to hydrogen sulfide formation in landfills. Experience at Maine landfills shows that CDD and crushed CDD (fines), containing gypsum, are a significant source of sulfate. Other types of waste streams that may contain sulfate include wastes from pulp and paper mill bleaching and coating operations and sludges from wastewater treatment plants.

How do landfills check for hydrogen sulfide?

Different methods can be used to check for hydrogen sulfide and are selected based on site-specific needs. Hydrogen sulfide can be detected and measured with portable or stationary continuous air monitors. Air sampling and subsequent laboratory analysis can also be conducted.

How can hydrogen sulfide be controlled in the landfill environment?

Hydrogen sulfide and other landfill gases can be controlled by installing an active gas management system that pulls out and burns the landfill gas. Also, hydrogen sulfide emissions can be reduced by decreasing the amount of sulfate containing wastes entering the landfill, and by applying certain cover materials such as soil amended with lime and fine concrete.

What are Maine's health guidelines for hydrogen sulfide?

In 2006, the Maine Center for Disease Control & Prevention (ME-CDC) established ambient air guidelines for hydrogen sulfide. These guidelines apply to the general public. The Occupational Health and Safety Administration sets exposure standards for site workers. The ME-CDC's ambient air guidelines of 30 parts per billion (ppb) for acute (short-term, 30-minute) exposure and 1 ppb for chronic (long-term, greater than 1-year) exposure are not regulatory standards. They are intended to provide health-based benchmarks for interpreting monitoring data. Monitoring data is also used to help determine whether a landfill facility is effectively controlling hydrogen sulfide emissions.

How will I know if I'm being exposed to low levels of hydrogen sulfide?

Exposure to low concentrations (within the 30 ppb range) of hydrogen sulfide may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some individuals with respiratory problems, such as asthmatics. If you live near a landfill and experience these symptoms, you should discuss them with your primary health care professional.

What other resources are available if I would like additional information on hydrogen sulfide?

The Maine Department of Environmental Protection (http://www.maine.gov/dep/index.shtml), the Maine Center for Disease Control and Prevention (http://www.maine.gov/dhhs/boh/), the Agency for Toxic Substances and Disease Registry (http://www.atsdr.cdc.gov/), the Occupational Health and Safety Administration (http://www.osha.gov), and the National Institute for Occupational Safety and Health (http://www.cdc.gov/niosh/) can offer additional information on hydrogen sulfide.

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References

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